Foundations of Flight: Approach with Confidence—Part Seven, High-Performance Approaches

Brought to you by AXIS Flight School Instructor Niklas Daniel at Skydive Arizona in Eloy. More skydiving educational content and information about professional coaching is available at axisflightschool.com.

Performing speed-induced landings greatly increases the risk of injury or death. To maximize safety, jumpers must receive professional instruction before attempting them.

Watching a skilled canopy pilot execute a high-performance landing that produces tremendous speed is poetry in motion and music to the ears. High-performance approaches are not mysterious. They represent a continuation and refinement of fundamental skills and proper gear selection. High-performance landings use a specialized approach technique where your goal is to generate greater velocity than a standard approach. The energy created is then used to glide horizontally across the ground, or water during competitions, at high velocity. Whether it's for fun, such as beer line swooping, or competition in canopy piloting, you typically use the added energy for activities that fall into two categories: performance (speed, distance and accuracy) or artistic (freestyle). While highly rewarding when executed properly, the added risk and complexity require advanced training and proper equipment. You should be consistently accurate before adding speed, and that accuracy comes from precise pattern work. Put simply, your performance turn can only be as good as the setup that precedes it.

High-performance approaches require more altitude than a standard approach because the aim is to convert altitude (potential energy) into airspeed (kinetic energy). The pattern size and shape remain mostly the same as on a standard approach, but the checkpoint altitudes increase based on the amount of altitude lost during the final turn. In accordance with the USPA Group Member pledge, drop zones do not permit standard and high-performance approaches to share a common landing area, as their respective checkpoint altitudes and speeds can vary greatly. To reduce the risk of canopy collisions, high-performance landings should be performed during a time or location that separates them from others flying a standard approach. This article will not discuss specifics on how to generate speed, but rather how you can build upon the pattern fundamentals in the last six installments for high-performance approaches.

The Descent Column

Most high-performance approaches start on the base leg, perpendicular to the target. Depending on your preferred technique for generating speed, you can use a variety of inputs to achieve this. However, once you include a roll into the equation (i.e, rolling into the turn—either toward or away from the target), you have officially entered the descent column. This is a flight path that is predominantly vertical in an effort to use gravity and streamlining techniques to build speed. Turns greater than 90 degrees have a flight path that resembles a single helix or spiral, which alters your position under the wing, causing the nose of the wing to point toward the ground. Every additional rotation requires you to enter the descent column at higher altitudes. Types of turns by degrees and their directions with respect to the target:

Toward	Away
90°	270°
450°	630°
810°	990°

A higher degree turn does not automatically guarantee a faster landing. This is where your spee- building technique comes in, as well as understanding how to adjust the roll rate in response to important visual cues. The higher the turn, the more time you have to adjust and build speed. However—just like a body in freefall will eventually reach terminal velocity—you will also reach a point where you cannot go any faster. The turn selection (left- or right-handed direction, and degrees) depends mostly on personal preference but can also be dictated by ground obstacles and surface conditions. This is because the descent column may not always be perfectly vertical with respect to the ground, as wind conditions influence your track over the ground.

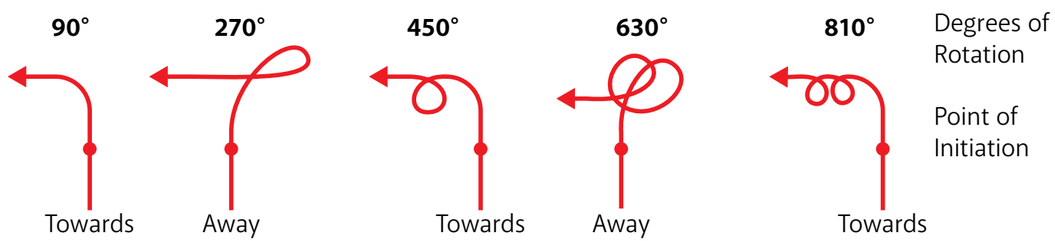
The Landing Corridor

At the bottom of the descent column, you must smoothly transition from a vertical flight path to a horizontal one. This phase is called the "rollout" and must be executed at an altitude and location that allows the energy generated in the turn to be placed accurately in a lane oriented toward a specific target. Roll out too high, and much of the energy created in the turn will be lost. Roll out too low, and you increase the risk of striking the ground. Flying at high speed in close proximity to the ground requires intuitive energy-management skills.

An imprecise setup is the root cause of most poorly executed turns. The Old West lawman Wyatt Earp once said, "Fast is fine, but accuracy is final. You must learn to be slow in a hurry." A high level of precision can help keep you safe. Understanding how each segment of the approach feeds into the next can prevent you from getting disoriented during the rotations in the descent column and help you know when and in which direction to abort if necessary.

While airspeed is lost when rolling out too high, this conservative approach is imperative during the learning process. An effective way to dial in altitudes is to use GPS tracking while executing the intended performance turn at high altitudes. Once you are consistent—in both altitude loss and heading control—you can initially pad your altitude to add a margin of safety when taking it to the ground. Be patient and inch your way closer to the ground over the course of many jumps, learning something from every single landing. It is important to note that trial and error are an unsafe and inefficient way to learn. The best way to learn is using professional coaching to guide your training process and contextualize the data collected.

Information about AXIS' coaching and instructional services is available at axisflightschool.com. The author intends this article to be an educational guideline. It is not a substitute for professional instruction.



This set of illustrations depicts turns with varying degrees of rotation and their points of initiation. The point of initiation increases in altitude when the degrees of rotation increase. Note: Flight path shapes are exaggerated to show degrees of rotation.